

Life Satisfaction of Adolescents in Hunan, China: Reliability and Validity of Chinese Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS)

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Abstract There are few short scales focused on life satisfaction for adolescents in China. This study aims to investigate the reliability and validity of the Chinese version of the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) by survey of a random sample of 2,406 adolescents aged from 12 to 18 years old in Hunan, China. Internal consistency reliability was 0.772, 0.742 and 0.799 for the total sample, the boys and the girls, respectively; test–retest reliability ranged from 0.807 to 0.913 for five items and the total BMSLSS; all item total correlations ranged from 0.580 to 0.740 while inter item correlations ranged from 0.189 to 0.465. All five items were found to be loaded satisfactorily on a single factor model. BMSLSS was highly correlated with overall satisfaction and self-esteem. There were significant differences between genders for domains of friends, school, and self and for overall life satisfaction. We conclude that the Chinese version of the BMSLSS is a reliable and valid instrument, with good construct validity for Chinese adolescents of both genders.

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1 Introduction

Adolescence is a critical stage of physical and psychological development. Psychology has traditionally focused on psychological deficits and psychopathology of adolescents, however, more and more attention has been attached to the importance of positive well-being during adolescent periods by positive psychologists since the 1990s (Huebner and Dew 1996; Lewis et al. 2011). Life satisfaction has been defined as a person's subjective, global evaluation of the positivity/quality of life, as a whole or specific aspect of life (e.g., family life, school experiences) (Diener et al. 1999). Although it has been less usual to study adolescents' life satisfaction compared with that of adults, it is essential to understand their subjective well-being or quality of life and meaningful to find out how to promote their positive well-being and to prevent psychopathology in adolescents. High levels of life satisfaction are related to positive outcomes in intrapersonal, interpersonal, vocational, health, and educational arenas, while low levels of life satisfaction are similarly predictive of a variety of negative outcomes, including various high-risk behaviors (e.g., drug and alcohol use, and aggressive/violent behavior), psychopathological symptoms (depression, anxiety, low self-esteem, low self-efficacy, loneliness) and physical health indices (e.g., malnutrition) (Valois et al. 2001, 2004; Zullig et al. 2001; Blood et al. 2011; Brantley et al. 2002). Therefore, instruments with strong psychometric properties are needed to assess the life satisfaction of adolescents to provide important clues regarding their risk for subsequent psychological problems, and to help find a feasible way to improve their mental health.

Several instruments have been developed to measure life satisfaction in adolescents in western countries (Clench Aas et al. 2011; Huebner et al. 1998; Ravens Sieberer et al. 2010); however, there are few scales focused on life satisfaction for adolescents in China. The Multidimensional Students' Life Satisfaction Scale (MSLSS) (Huebner et al. 1998) is one of the most broadly used measures for assessing life satisfaction of youth. The Chinese version of the MSLSS, translated by Tian and Liu (2005), has strong psychometric properties for Chinese students. However, this scale has 40 items and is impractical for large-scale surveys, longitudinal studies, and studies for screening and detecting risk groups. The 5-item Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) (Seligson et al. 2003) was developed based on the theoretical model of the MSLSS to measure adolescents' satisfaction with family, friends, school, self and environment. Although this brief scale has good reliability and validity in several western countries (Clench Aas et al. 2011; Seligson et al. 2003; Zullig et al. 2005; Siyez and Kaya 2008), to our knowledge, no Chinese study has analyzed its reliability and validity for Chinese adolescents. Moreover, the norms of the scale in Western countries may not be suitable for adolescents in China because cultural factors such as different social and cultural experiences, parenting patterns, family life, and schooling may influence children's cognitive, emotional, and social development and their overall well-being.

Knowing the validity and reliability of the brief scale can help health care professionals decide whether it is appropriate to measure adolescents' life satisfaction. Therefore, this study aims to evaluate the reliability and validity of the BMSLSS for adolescents in China and identify the difference of life satisfaction in adolescents of different genders to help

health care professionals decide whether it is appropriate to measure the adolescents' life satisfaction.

2 Methods

2.1 Participants

The target population for this study was 12–18-year-old students from the 7th to the 9th grades in Hunan, China. With the permission and assistance of teachers, we obtained a random sample from 15 different junior middle schools in five rural counties, which is in the central southern part of mainland China. Ethics committees from Central South University, the Health Department of Hunan provinces, and all five counties approved the research protocol.

In all, 4,975 students were asked to participate in the study, which was to be conducted the following week, and were told about the purpose of the research, that the information they provided would be secured by the investigator, and that they were free to join in the research. Consent forms were given to the students themselves and to their guardians/parents to complete. Students were directed to return signed consent forms to their teachers. There were 3,000 students who returned consent forms signed by themselves and their guardians/parents to their teachers and filled out questionnaires in their classrooms without the presence of teachers and with the administration of a trained research assistant. The effective response rate was 80.0 %, as 294 withdrew and 300 omitted answering 20 % or more of the questions. One hundred twenty participants were asked to fill out the scale twice within an interval of 14 days and 116 completed both the test and retest questionnaires.

2.2 Instruments

The BMSLSS includes five questions to assess satisfaction with specific life domains tapped by the MSLSS. Each question assesses satisfaction with life in one of five areas pertinent to the experiences of youth (e.g., “I would describe my satisfaction with my family life/friendships/school experience/myself/where I live as...”). It is a seven-point scale with a response range from 1 = terrible to 7 = delighted. Students' mean total scores for the BMSLSS were calculated by summing responses to the five items and dividing by the number of items. One additional item (e.g., “I would describe my satisfaction with my overall life as...”) was added to tap satisfaction with life as a whole and used as a validity check. The Cronbach's alpha of internal consistency in former studies ranged from was 0.75 to 0.89 (Clench Aas et al. 2011; Seligson et al. 2003; Zullig et al. 2005; Siyez and Kaya 2008).

The Chinese version of the BMSLSS was developed by using a back-translation method. A panel of four bilingual psychological researchers translated the original English version of the BMSLSS into Chinese. The importance of conceptual equivalence was emphasized and any difficulties encountered by individual translators were recorded. Several meetings were held to review and to discuss these difficulties and to reach consensus in creating the translated version. The translated version was then back-translated into English by an independent bilingual researcher. The panel then reviewed the back-translated version and compared it with the original version. Some minor revisions were

made. The Chinese translation was then pilot-tested on 20 adolescents. No particular problems were identified in the pilot test.

The ten-item Rosenberg Self-Esteem Scale (RSES) (Rosenberg 1965; Ji and Yu 1999) was used to measure self-esteem or global feeling of self-worth. It was also used as a criterion for examining the convergent and discriminant validity of the BMSLSS because previous studies have shown that adolescents with a higher life satisfaction had higher self-esteem (Blood et al. 2011). Responses range on a 4-point scale from 1 (strongly disagree) to 4 (strongly agree). An overall self-esteem factor can be calculated with the sum score ranging from 10 to 40. A higher score indicates higher self-esteem. Cronbach's alpha ranged from 0.77 to 0.88 for various populations and the test–retest correlation over 2 weeks was 0.85 (Rosenberg 1965; Ji and Yu 1999).

2.3 Data Analysis

Means and standard deviations of the BMSLSS, scores of each item and overall life satisfaction were analyzed for the total sample, for boys, and for girls, and the *t* test was used to compare the differences between genders. Internal consistency was assessed using item-total correlations and Cronbach's alpha. The test–retest reliability was estimated by the interclass correlation coefficient (ICC). Convergent and discriminant validity were assessed using Pearson correlation coefficients between the BMSLSS and overall life satisfaction/self-esteem. Exploratory factor analysis and confirmatory factor analysis (CFA) were performed to examine the construct validity. Four indices [goodness-of-fit index (GFI); Tucker–Lewis index (TLI); comparative fit index (CFI); and incremental fit index (IFI)] were used to test model fit, and the root mean square error of approximation (RMSEA) was used to test the closeness of fit. Descriptive statistics, *t* test, Cronbach's alpha, ICC, Pearson correlations, and principal components were analyzed using SPSS 13.0 (SPSS Inc., Chicago, IL, USA). CFA was done using AMOS 5.0 (SPSS Inc.).

3 Results

3.1 Socio-demographic Background Characteristics

Of 2,406 adolescents, 479 (19.9 %) were from North Hunan, 427 (17.7 %) from South Hunan, 527 (21.9 %) from Central Hunan, 432 (18.0 %) from West Hunan, and 541 (22.5 %) from East Hunan. There were 1,182 boys (49.1 %) and 1,224 (50.9 %) girls. The age range was 12–17 years, with an average of 14.44 ± 1.18 years. There were 723 (30.0 %) adolescents in grade 7, 754 (31.3 %) in grade 8, and 929 (38.6 %) in grade 9.

3.2 Descriptive Analysis and Comparison Between Genders

Means and standard deviations of the BMSLSS, each domain, and overall life satisfaction score were each calculated for all the adolescents, the boys, and the girls (see Table 1). There were significant differences between genders for domains of friends, school and self and the overall life satisfaction (Table 1).

Table 1 Descriptive statistics of BMSLSS, subscale scores and overall life satisfaction

	Total (n = 2,406)	Boys (n = 1,182)	Girls (n = 1,224)	t Test	
	M (SD)	M (SD)	M (SD)	t	P
Family	5.10 (1.39)	5.10 (1.38)	5.10 (1.40)	-0.057	0.954
Friend	5.28 (1.23)	5.22 (1.28)	5.33 (1.18)	-2.324	0.020
School	4.46 (1.46)	4.37 (1.51)	4.55 (1.41)	-3.076	0.002
Self	4.57 (1.52)	4.68 (1.50)	4.46 (1.54)	3.628	0.000
Environment	4.86 (1.53)	4.87 (1.50)	4.85 (1.55)	0.389	0.697
BMSLSS	4.91 (0.97)	4.92 (0.94)	4.91 (1.01)	0.293	0.770
Overall	5.21 (1.40)	5.27 (1.35)	5.15 (1.44)	2.164	0.031

Ratings are made on a scale in which 1 = terrible, 2 = unhappy, 3 = mostly dissatisfied, 4 = mixed, 5 = mostly satisfied, 6 = pleased, 7 = delighted

3.3 Reliability

Internal consistency of the BMSLSS was 0.772, 0.742 and 0.799 for the total sample, boys, and girls, respectively. The test-retest reliability was adequate (>0.80), with 0.911, 0.876, 0.858, 0.807, 0.903 and 0.913 for items of family, friends, school, self and environment, and for the mean score of the BMSLSS, respectively. Item total correlations for the five items of the BMSLSS with the total BMSLSS scores (see Table 2) ranged from 0.583 to 0.722 for the total sample, 0.580–0.702 for the boys, and 0.592–0.740 for the girls. Inter item correlations (see Table 2) ranged from 0.235–0.429 for the total sample, 0.189–0.389 for the boys, and 0.281–0.465 for the girls.

3.4 Validity

The exploratory factor structure of the BMSLSS was analyzed for gender levels and for the overall sample (see Table 3). All five items were found to be loaded satisfactorily on a single factor. Factor loadings ranged from 0.631 to 0.730 for the total sample, 0.596–0.719 for the boys, and 0.639–0.740 for the girls. Figure 1 shows the confirmatory structure models with standardized factor loadings for the total sample, the boys, and the girls. All the models had a good model-data fit (GFI, TLI, CFI, and IFI > 0.9 ; RMSEA < 0.07). Criterion-related validity was good as BMSLSS was highly correlated with overall satisfaction and self-esteem (see Table 2).

4 Discussion

An important finding of the present study was that boys reported lower levels of satisfaction with friends and school, and higher levels of satisfaction with self and overall life satisfaction. In traditional Chinese culture, gender hierarchy is a principle of internal family organization that is accentuated. Boys may get more love and privilege or even be spoiled by parents, especially in rural areas; therefore, boys showed significantly higher levels of self-satisfaction. Girls had more friends and perceived more social support or life satisfaction from friends or schools (Lin et al. 2008). However, both boys and girls in this study reported somewhat positive feelings (all scores >4) for mean total BMSLSS score

Table 2 Inter-item correlations, item total correlations, and criterion-related correlation of BMSLSS

	Friend	School	Self	Environment	BMSLSS	Overall	Self-esteem
Family							
Total	0.319	0.346	0.318	0.429	0.722	0.567	0.345
Male	0.292	0.336	0.274	0.389	0.702	0.521	0.344
Female	0.348	0.359	0.360	0.465	0.740	0.610	0.367
Friend							
Total		0.359	0.262	0.235	0.583	0.325	0.356
Male		0.349	0.253	0.189	0.580	0.298	0.310
Female		0.367	0.281	0.283	0.592	0.358	0.376
School							
Total			0.303	0.307	0.656	0.371	0.435
Male			0.251	0.284	0.654	0.349	0.411
Female			0.368	0.333	0.664	0.400	0.475
Self							
Total				0.315	0.651	0.425	0.558
Male				0.245	0.610	0.362	0.602
Female				0.379	0.690	0.478	0.534
Environment							
Total					0.702	0.546	0.422
Male					0.668	0.510	0.398
Female					0.732	0.579	0.464
BMSLSS							
Total						0.789	0.580
Male						0.760	0.545
Female						0.814	0.598

All correlations were significant at 0.01

Table 3 Factor loadings from principle components factor analysis of BMSLSS

	Total component	Boys component	Girls component
Family	0.730	0.719	0.740
Friend	0.631	0.627	0.639
School	0.689	0.688	0.697
Self	0.641	0.596	0.685
Environment	0.682	0.642	0.715

Extraction method: principal components analysis

and there were no significant differences between genders for mean total BMSLSS scores or for domains of family and environment, which were similar to that of previous reports (Seligson et al. 2003).

The Cronbach's alpha exceeded 0.70 in this study and was similar to findings in former studies (0.75 for middle school students and 0.81 for high school students) (Valois et al. 2004; Seligson et al. 2003). The Cronbach's alpha was a little higher for girls, indicating that girls may have more stable life satisfaction. All the test-retest reliabilities of the BMSLSS and the five domains were significantly high ($r > 0.80$). Inter item correlations

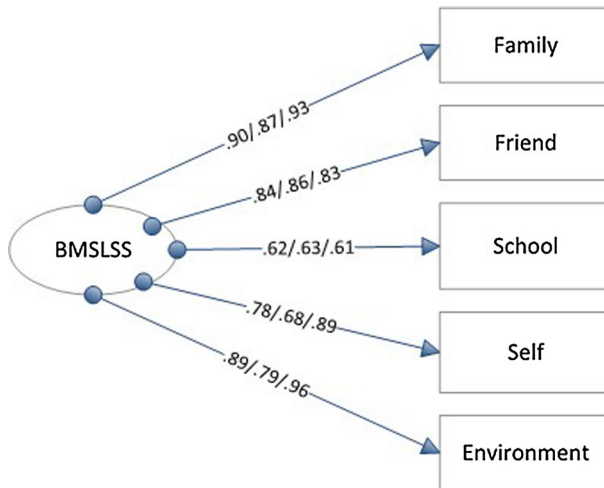


Fig. 1 Structure of the short form Chinese BMSLSS with significantly standardized factor loadings (total/boys/girls; all $P < 0.001$)

ranged from 0.235 to 0.429 for the total sample, 0.189–0.389 for the boys, and 0.281–0.465 for the girls, suggesting that adolescents can distinguish between the separate domains of the BMSLSS. Item total correlations ranged from moderate to high, which yielded scores highly similar to those in studies by Seligson et al. (2003) in the US and Siyez and Kaya (2008) in Turkey. Adolescents can distinguish between the separate domains of the BMSLSS as all inter item correlations among the five BMSLSS domains were below 0.50. The Cronbach's alpha of the BMSLSS was found to be a little lower but the test–retest reliabilities were higher than that reported for the Chinese version of the MSLSS (0.90) (Tian and Liu 2005). As the BMSLSS has far fewer items, it was more acceptable when used with adolescents in China, especially for studies with multiple scales or large samples.

All five items were found to be loaded satisfactorily on a single factor. Factor loadings ranged from 0.631 to 0.730 for the total sample, 0.596–0.719 for the boys, and 0.639–0.740 for the girls. Congruent with the BMSLSS literature (Seligson et al. 2003; Zullig et al. 2005), a one factor model was identified and had a good model-data fit (GFI, TFI, CFI, and IFI > 0.9 ; RMSEA < 0.07). The scores of the five items were only moderately related to global life satisfaction and self-esteem but the mean total BMSLSS score was highly correlated with global life satisfaction and self-esteem positively, which showed acceptable criterion-related validity.

Some limitations of the study should be noted. Although the samples were obtained from 15 junior middle schools in different areas of Hunan province in China, they did not cover adolescents who are not enrolled in schools and most of them were from rural areas. Further surveys should be done including those adolescents and differences between urban and rural areas should be identified. Moreover, we did not compare the reliability and validity of the BMSLSS and the MSLSS in the same survey and cannot conclude the superiority of the BMSLSS to the MSLSS, aside from having fewer items.

In conclusion, the Chinese version of the BMSLSS is a valid and reliable measure with high stability during a 2-week test–retest interval, excellent internal consistency, and acceptable validity in this sample. We believe that it can contribute to the progress of studies on life satisfaction in China.

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Conflict of interest The authors declare that there are no conflicts of interests.

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